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October 19, 2001 4013-20000

### **VIA OVERNIGHT MAIL**

Mr. Joseph McDowell (3HS21) Remedial Project Manager U.S. Environmental Protection Agency Region III 1650 Arch Street Philadelphia, Pennsylvania 19103

Subject:

Report of Finding for Excavation No. 2 on Liberty Property Trust's 2301 Renaissance Boulevard Property, Upper Merion Township, Pennsylvania

Dear Mr. McDowell:

As you are aware, during the reconfiguration of Detention Basin #1 on Liberty Property Trust's (LPT's) 2301 Renaissance Boulevard property, a small area of soil mixed with coal tar was encountered. This area, which was designated Excavation No. 2, was remediated through the removal and off-site disposal of the potentially impacted soil. This report of findings provides a discussion of pertinent background information, the remedial and post-excavation sampling activities that were implemented in Excavation No. 2, and the focused risk assessment that was completed to verify the effectiveness of the remedial activities.

### **BACKGROUND**

In accordance with approved construction plans, LPT recently completed the reconfiguration of Detention Basin #1 located on their 2301 Renaissance Boulevard property. As shown on Figure 1, Detention Basin #1 is located in the north central portion of the site along Renaissance Boulevard. During the reconfiguration activities, small pieces of coal tar mixed with soil were encountered in an area located just northeast of the former outfall for Basin #1. This area was subsequently designated Excavation No. 2. The limits of Excavation No. 2 were determined by installing test trenches around the perimeter of the area where the impacted soils were initially encountered. The location of Excavation No. 2 with respect to Detention Basin #1 is shown on Figure 2.

As discussed below, the potentially impacted material located in Excavation No. 2 was remediated prior to the reconfiguration of the basin. As can be seen from Figure 2, Excavation No. 2, which was backfilled with clean soil after completion of the remedial activities, is

currently located beneath the southeast berm of the detention basin. The soil used to construct the berm over a majority of Excavation No. 2 is over 4 feet thick. The detention basin has been installed as a permanent structure and will be lined with a 40-mil liner.

### **REMEDIAL ACTIVITIES**

During the reconfiguration of Detention Basin #1, an area of soil mixed with coal tar was encountered near the southeast corner of the basin. This area was designated Excavation No. 2 and its location is shown on Figure 2. Excavation No. 2 consisted of small pieces of coal tar mixed with soil. The surface of Excavation No. 2 originally coincided with grade level. However, as part of on-site construction activities, Excavation No. 2 was covered with about 1 to 1.5 feet of clean soil. The limits of Excavation No. 2, as shown on Figure 2, were initially determined by installing a series of test trenches around the perimeter of the area. The subsequent removal of impacted soils from this area, as discussed below, confirmed the limits of Excavation No. 2.

As part of the remediation of this area, the 1-1.5 feet of clean soil located over Excavation No. 2 was removed and stockpiled in an area separate of the potentially impacted material that was subsequently removed from this area. After removing the clean overburden material, the small pieces of coal tar and impacted soil was removed. The potentially impacted material removed from the excavation was stockpiled on and covered with plastic.

The excavation activities proceed until all coal tar and visually impacted soil had been removed. As shown on Figure 2, the dimensions of Excavation No. 2 were approximately 20 feet long by about 15 feet wide. The depth of the excavation varied but generally was from 3 to 4 feet deep. In all, about 30 cubic yards of potentially impacted soil mixed with coal tar was removed from Area 2. This soil was subsequently transported to R3 Technologies, located in Morrisville, Pennsylvania for thermal destruction. A copy of the manifests documenting the off-site disposal of this material is included in Appendix A.

After removing all potentially impacted soil, two post-excavation soil samples were collected from the excavation. These samples were designated SR-9 and SR-10 and they were collected at the locations shown on Figure 3. Sample SR-9 was collected from the northern sidewall and sample SR-10 was collected from the bottom of the excavation. The post-excavation samples were collected at locations approved by EPA's oversight contractor from Dynamac.

The post-excavation soil samples were submitted for the laboratory analysis of lead and the polynuclear aromatic hydrocarbons (PAHs) benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, and dibenzofuran. The samples were analyzed by CompuChem, an EPA approved CLP laboratory located in Cary, NC. The organic analyses were performed using USEPA Method OLM04.2 and the metal analyses were performed using USEPA Method ILM04.1.

The results of the analysis of the post-excavation soil samples are summarized in Table 1 and a copy of the laboratory data sheets is included in Appendix B. A review of Table 1 reveals that a

few of the tested PAH compounds were detected in each of the samples at low concentrations. Lead was detected at consistently low concentrations in both samples.

Upon completion of the remedial activities, the excavation was backfilled to its original preconstruction grade. Upon completion of the backfilling activities, the berm associated with the reconfigured Detention Basin #1 (see Figure 2) was installed over the former location of Excavation No. 2. Excavation No. 2 is currently covered with up to 4 feet of clean soil associated with the southeast portion of the outer berm for the reconfigured Detention Basin #1.

### FOCUSED RISK ASSESSMENT

As discussed above, post-excavation soil samples were collected from Excavation No. 2 after the remedial activities had been completed and all potentially impacted material had been removed. However, no site-specific cleanup standards for Excavation No. 2 were included in the Record of Decision (ROD) developed by the USEPA for the Crater Resources Superfund site. Therefore, based upon discussions with and approval of the USEPA, a Focused Risk Assessment (FRA) was implemented using the results of the post-excavation samples to evaluate the effectiveness of the remedial activities implemented in Excavation No. 2. Potential risks to industrial and onsite adult construction workers were evaluated.

This FRA was performed using current EPA guidance for preparing risk assessments at Superfund sites, following a discussion with EPA on appropriate receptors. This risk assessment was conducted with the same assumptions and exposures used to conduct the Baseline Risk Assessment for the Crater Resources Superfund site. The RFA included the following components:

- Hazard Identification
- Toxicity Assessment
- Exposure Assessment
- Risk Characterization

These components were completed sequentially and are discussed in the following sections.

### **Hazard Identification**

The constituents of potential concern (COPC) identified in post-excavation soil samples included lead and the PAHs benzo(a)anthracene, benzo(b)flouranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, and dibenzofuran. The maximum reported concentrations and their corresponding arithmetic mean are presented in Table 2.

### **Toxicity Assessment**

This section presents toxicity criteria and information that relates constituent exposure (dose) to anticipated health effects (response) for each COPC. Toxicity criteria derived from dose-

response data were used in the Risk Characterization to estimate the carcinogenic risk and non-carcinogenic hazard associated with exposure to the identified COPCs.

Toxicity criteria used in this FRA were obtained from the EPA Integrated Risk Information System (IRIS) on-line database, the Health Effects Assessment Summary Tables (HEAST) (EPA, 1997) and the EPA's National Center for Environmental Assessment (NCEA) (EPA, 2000).

Table 3 presents available oral (CSFo), dermal (CSFd), and inhalation (CSFi) cancer slope factors used to evaluate carcinogenic risk and oral (RfDo), dermal (RfDd), and inhalation (RfDi) chronic reference doses used to evaluate non-carcinogenic risks. Available inhalation unit risk factors were converted into inhalation slope factors and inhalation reference concentrations were converted into inhalation reference doses in accordance with EPA guidance (1989). Interim toxicity criteria obtained from NCEA are also included in Table 3 for certain RfDs, which were not available in IRIS (2000) or HEAST (1997).

### **Exposure Assessment**

The exposure assessment evaluated the likelihood, magnitude, and frequency of exposure to COPCs, and identified pathways and routes by which human receptors may come into contact with these constituents. The specific steps involved in the exposure assessment included:

- Identifying potentially exposed populations;
- Identifying media of concern;
- Identifying actual and potential exposure routes;
- Establishing exposure parameters; and
- Estimating exposure doses.

Since the post-excavation soil samples were collected at depths greater than 2 feet and the area is covered with up to 4 feet of clean soil, the most likely human receptor is on-site construction workers. Additionally, in order to be conservative, potential exposures to long-term industrial workers were also evaluated. Potential exposure routes for soil-based constituents include oral ingestion of soil, dermal contact with soil, and inhalation of fugitive dusts. However, contact with the COPC remaining in the soils in Excavation No. 2 via these pathways will be limited because a majority of Excavation No. 2, as indicated above, has been and will remain covered with up to 4 feet of clean soil associated with a berm for an adjacent detention basin.

The equations used to calculate oral intake and inhalation intake are included in Tables 4, 5, and 6 for oral, inhalation, and dermal exposures, respectively. The various exposure assumptions are presented in these tables, and are identical to the assumptions used in the EPA baseline risk assessment of the Crater Resources Superfund site.

As indicated in Tables 4 through 6, exposure assumptions are provided for both Reasonable Maximum Exposures (RME) and Central Tendency Exposures (CTE). The primary difference between the RME and CTE involves the duration of exposure and magnitude of constituent

concentrations. The RME is based on the maximum detected value while the CTE is based on the arithmetic mean of all samples.

#### Risk Characterization

The results of the exposure assessment (i.e. calculated intakes) were integrated with toxicity information, using EPA's current approach, to derive quantitative estimates of potential risk associated with the previously defined exposure scenarios. Risk estimates were calculated following standard procedures outlined in EPA's Risk Assessment Guidance for Superfund/Part A (EPA, 1989) with the results compared to levels of acceptable risks defined by EPA (1990).

Non-carcinogenic hazard for each identified COPC was calculated using the methods described by EPA (1989). A hazard quotient was computed for each COPC by determining the ratio of the calculated chemical intake to the appropriate reference dose. Hazard indices (HI) were then calculated as the sum of all appropriate hazard quotients, to fully evaluate potential non-carcinogenic hazard associated with a defined exposure.

The non-carcinogenic risk is presented in Table 7 for RME and Table 8 for CTE. The data indicates the total non-carcinogenic risk is well below a HI of 1.0 for both the construction worker and industrial worker. This suggests it is very unlikely that either construction or industrial workers would be exposed to unacceptable non-carcinogenic risks in the area of Excavation No. 2 on the LPT property.

Carcinogenic risk was calculated for each COPC as a product of the constituent intake and the chemical-specific carcinogenic slope factor. Under each defined scenario, estimated human health risks for each carcinogenic constituent is summed to derive a total risk associated with a specific route of exposure (e.g., inhalation). The resulting risk is then compared to acceptable risk as defined by the EPA (1990) in the National Oil and Hazardous Substances Pollution Contingency Plan (i.e., 1 x 10<sup>-7</sup> to 1 x 10<sup>-4</sup>).

The carcinogenic risk for the identified COPCs is presented in Tables 9 and 10 for RME and CTE exposures, respectively. For RME exposures for construction workers, the total carcinogenic risk for oral exposure to COPCs is 8.8 x 10<sup>-7</sup> while the total carcinogenic risk with inhalation of fugitive dust is 3.5 x 10<sup>-9</sup>. The combined risk for exposure for oral and inhalation exposures is less than 8.8 x 10<sup>-7</sup>. This is well within the range of acceptable risk of 1 x 10<sup>-7</sup> to 1 x 10<sup>-4</sup>. The total calculated risk for CTE exposure was 1.4 x 10<sup>-7</sup>. For RME exposures for industrial workers, the total carcinogenic risk for oral exposures to COPCs is 3.7 x 10<sup>-6</sup> while the total carcinogenic risk with inhalation exposures is 1.4 x 10<sup>-7</sup>. The combined carcinogenic risk for industrial workers is 3.8 x 10<sup>-6</sup>, which is also within the acceptable risk range stated above. The CTE exposure for the industrial worker is 7.5 x 10<sup>-8</sup>.

Lead cannot be evaluated in a quantitative risk assessment because there are no current toxicity values for this constituent. Generally, lead levels are screened in soil against recommended guidelines for lead. Current lead guideline levels are 400 mg/kg for bare soil in areas that children are likely to use and 2,000 mg/kg for soil in areas where contact with children is

considered less likely. Because the highest reported lead concentration in Excavation No. 2 soil (40.8 mg/kg) is well below recommended EPA and PADEP cleanup standards, current lead levels in the soil do not present a human health concern. As such, no further evaluation of lead was completed as part of this FRA.

### **SUMMARY**

During the reconfiguration of Detention Basin #1 on LPT's 2301 Renaissance Boulevard property, a small area of soil mixed with coal tar was encountered. This area was subsequently designated Excavation No. 2. Based on the presence of this material, potentially impacted soil located in Excavation No. 2 was remediated. In all, about 30 cubic yards of soil mixed with coal tar was removed and recycled off-site at a properly permitted facility. Upon completion of the remedial activities, two post-excavation soil samples were collected from Excavation No. 2. A Focused Risk Assessment (FRA) was implemented using the results of the post-excavation samples to verify the effectiveness of the remedial activities. Based on the results of the FRA, soils remaining in Excavation No. 2 do not pose an unacceptable risk to industrial or on-site construction workers. As such, Penn E&R does not recommend any additional investigation or remediation of Excavation No. 2 soils.

Should you have any questions regarding the contents of this report or any other project-related issues, or if you require additional information, please do not hesitate to call us.

Sincerely,

PENN ENVIRONMENTAL & REMEDIATION, INC.

Michael A. Christie, P.G.

Vice President

DAC:dlc Enclosure 4013:area2rpt

cc: Dave Minsker, PADEP (w/2 copies of enclosure)

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TABLE 1

## SUMMARY OF ANALYTICAL RESULTS FOR POST-EXCAVATION SOIL SAMPLES COLLECTED FROM EXCAVATION NO. 2 LOCATED AT THE SOUTHEAST END OF BASIN NO. 1 ON LPT'S 2301 RENAISSANCE BOULEVARD PROPERTY

ANALYTICAL	SAMPLE DESIGNATION/ANALYTICAL RESULTS (1,2)					
PARAMETERS	SR-9	SR-10				
Benzo(a)anthracene	0.76	1.9				
Benzo(b)fluoranthene	1.7	2.2				
Benzo(a)pyrene	1.1	1.9				
Indeno(1,2,3-cd)pyrene	0.94	1.5				
Dibenzo(a,h)anthracene	0.26Ј	0.42Ј				
Dibenzofuran	0.042J	0.13J				
Lead	16.6	40.8				
Sample Collection Depth: (3)	3.0 (SW)	4.0 (BS)				

#### Notes |

- (1) Each sample was analyzed by CompuChem, a USEPA-approved laboratory for benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, dibenzofuran, and lead
- (2) All results are in milligrams per kilogram
- (3) Sample collection depths are in feet below the ground surface
- SW Sidewall sample
- BS Bottom sample
- J This compound was detected below the laboratory reporting limit but above the method detection limit. Therefore, the reported value should be considered an estimated concentration

Table 2 Constituents of Potential Concern in Excavation No. 2

Maximum Concentrations and Arithmetic Mean

Arithmatic Mean (mg/kg)	Maximum Concentration (mg/kg)	
		Semi-Volatile Compounds
1.3	1.9	Benzo(a)anthracene
1.5	1.9	Benzo(a)pyrene
2.00	2.2	Benzo(b)fluoranthene
0.34	0.42	Dibenzo(a,h)anthracene
1.2	1.5	Indeno(1,2,3-cd)pyrene
0.09	0.13	Dibenzofuran
		Metals
28.7	40.8	Lead
	40.8	Lead

Notes:

mg/kg - Milligrams per kilogram

Table 3 Toxicity Values for Constituents of Potential Concern

	RfDo (mg/kg/d)		RfDi (kg-d/mg)	RfDd (kg-d/mg)		CSFo (mg/kg/d)		CSFi (kg-d/mg)		CSFd (kg-d/mg)
Semi-Volatile Compounds										
Benzo(a)anthracene	па		na	na		7.30E-01	e	na		na
Benzo(a)pyrene	na		na	na		7.30E+00	1	3.10E+00	I	na
Benzo(b)fluoranthene	na		na	na		7.30E-01	e	na		na
Dibenzo(a,h)anthracene	na		na	na		7.30E+00	e	na		na
Dibenzofuran	4.00E-03	Ī	na	2.80E-03	d	na		na		na
Indeno(1,2,3-cd)pyrene	na		na	na		7.30E-01	e	na		na
Metals										
Lead	na		na	na		na		na		na

### Notes:

RfDo = Oral reference dose

RfDi = Inhalation reference dose

RfDd = Dermal reference dose

CSFo = Oral cancer slope factor

CSFi = Inhalation cancer slope factor

CSFd = Dermal cancer slope factor

i = IRIS, 2000 (Integrated Risk Information System)

h = HEAST, 1997 (Health Effects Assessment Summary Tables)

e = NCEA regional support provisional value (National Center for Environmental Assessment)

d = Calculated value

na = Not available.

Table 4 Oral Intake Factor Assumptions

		Construct Worke	<del></del>		ustrial orker
Dose =	Cs x IR x ET x FI x CF x EF x ED	*			
	BW x AT				
Where:					
Dose		RME	CTE	RME	CTE
Cs	= Soil concentration (mg/kg)	Chemical-specific	Chemical-specific	Chemical-specific	Chemical-specific
IR.	= Ingestion rate (mg/day)	480	200	50	50
FI	= Fraction Ingested	1	1	1	1
CF	= Correction Factor	1.00E-06	1.00E-06	1.00E-06	1.00E-06
EF	= Exposure frequency (days/yr)	156	78	250	219
ED	= Exposure duration (years)	1	1	25	7
BW	= Body weight (kg)	70	70	70	70
AT	= Averaging time (days)				
	Noncarcinogenic (AT = ED $\times$ 365)	365	365	9,125	2555
	Carcinogenic (AT = 70 yr x 365)	25,550	25,550	25,550	25,550
	Noncarcinogenic Oral Dose (mg/kg-day):	Chemical-specific	Chemical-specific	Chemical-specific	Chemical-specific
	Carcinogenic Oral Dose (mg/kg-day):	Chemical-specific	Chemical-specific	Chemical-specific	Chemical-specific

Table 5 Inhalation Intake Factor Assumptions

		Construction			ustrial
Dose =	Cs/PEF x IR x ET x EF x ED	Worker			orker
Dosc -	BWxAT				
Where:	DWXAI				
Dose		RME	CTE	RME	CTE
Cs	= Soil concentration (mg/kg)	Chemical-specific	Chemical-specific	Chemical-specific	Chemical-specific
PEF	= Site specific Particulate Emission Factor (m3/kg)	3.84E+6 m3/kg	3.84E+6 m3/kg	3.84E+6 m3/kg	3.84E+6 m3/kg
IR	= Inhalation rate (m3/hr)	3.3	2.5	3.3	1.3
ET	= Exposure Time (hr/day)	8.00	8	8.00	8
EF	= Exposure frequency (days/yr)	156	78	250	219
ED	= Exposure duration (years)	1	1	25	7
BW	= Body weight (kg)	70	70	70	70
ΑT	= Averaging time (days)				
	Noncarcinogenic (AT = ED x 365)	365	365	9,125	2555
	Carcinogenic (AT = 70 yr x 365)	25,550	25,550	25,550	25,550
	Noncarcinogenic Oral Dose (mg/kg-day):	Chemical-specific	Chemical-specific	Chemical-specific	Chemical-specific
	Carcinogenic Oral Dose (mg/kg-day):	Chemical-specific	Chemical-specific	Chemical-specific	Chemical-specific

#### Table 6 Dermal Intake Factor Assumptions

		Construc Worke			dustrial Vorker
Dose =	Cs x SMAFBP x DABS x FS x EF x ED x CF				· · · · · · · · · · · · · · · · · · ·
	BW x AT				
Where:					
Dose		RME	CTE	RME	CTE
Cs	= Soil concentration (mg/kg)	Chemical-specific	Chemical-specific	Chemical-specific	Chemical-specific
SMAFBP	=Summation (Adherence factor per body part exposed)	319	319	69	69
DABS	=Dermal Absorption Factor	Chemical- Specific	Chemical- Specific	Chemical- Specific	Chemical- Specific
CF	=Conversion factor	1.00E-06	1.00E-06	1.00E-06	1.00E-06
EV	= Event Frequency	1	ì	1	1
EF	= Exposure frequency (days/yr)	156	78	250	219
ED	= Exposure duration (years)	1	1	25	7
BW	= Body weight (kg)	70	70	70	70
ΑT	= Averaging time (days)				
	Noncarcinogenic (AT = ED x 365)	365	365	9,125	2555
	Carcinogenic (AT = 70 yr x 365)	25,550	25,550	25,550	25,550
	Noncarcinogenic Oral Dose (mg/kg-day): Carcinogenic Oral Dose (mg/kg-day):	Chemical-specific Chemical-specific	Chemical-specific Chemical-specific	Chemical-specific Chemical-specific	Chemical-specific Chemical-specific

Table 7 Non-Carcinogenic Risk

Based on Maximum Detected Concentrations in Subsurface Soil (Excavation No. 2)

Roasonable Maximum Exposure

	Oral Intake	Non-Carcinogenic Risk	Inhalation Intake	Non-Carcinogenic Risk	Dermal Intake	Non-Carcinogenic Risk	Total Non-Carcinogen
	(mg/kg/day)	Hazard Quetleat	(mg/kg/day)	Hazard Quotlent	(mg/kg/day)	Hazard Quotient	Risk
Semi-Volatile Compounds							
Benzo(a)anthracene	na .	na	n <u>a</u>	na			
Benzo(a)pyrene	nà	na	na	na			
Senzo(b)fluoranthene	ra ra	na	na na	NA			
Dibenzo(a,h)anthracene	RS.	na	 D2	na			
Dibenzofuran	3.81E-07	9.52E-05	na	na	2.54E-07	9.05E-05	1.86E-04
ndeno(1,2,3-cd)pyrene	5.012-07 Ra	na na	na na	na	2.34101	3.032-03	1.60E-04
indicate and a second	<b>.–</b>	•		•••			
Metals							
.ead	D.a.	na	13.2	na	na	na.	
[otal		9.52E-05				9.05E-05	1.86E-04
		9.52E-05				9.05E-05	1.86E-04
adastrial worker		9.52E-05				9.05E-05	1.86E-04
indastrial worker Semi-Voletile Compounds						9.05E-05	1.86E-04
industrial worker Semi-Volatile Compounds Senzo(a)anthracene	na	na	DA	na		9.05E-05	1.86E-04
industrial worker Semi-Volatile Compounds Senzo(a)anthracene Senzo(a)pyrene	na	na na	na.	na na		9.05E-05	1.86E-04
industrial worker  Semi-Volatile Compounds  Benzo(a)anthracene  Benzo(a)pyrene  Benzo(b)fluoranthene	na na	na na na na	na na	na na		9.05E-05	1.86E-04
Industrial worker  Semi-Veletile Compounds Senzo(a)anthracere Senzo(b)fluoranthene Dibenz(a,h)anthracene	n.a n.a. n.a.	na na na na	na na na	na na na			
ndestrial worker  Semi-Volatile Compounds Senzo(a)anthracene Senzo(b)fluoranthene Senzo(a,h)anthracene Sibenzo(a,h)anthracene	na na na 6.36E-08	na na na na 1.59E-05	na na na na	na na na na	8.78E-08	9.05E-05 3.13E-05	1.86E-04
ndestrial worker  Semi-Volatile Compounds Senzo(a)anthracene Senzo(b)fluoranthene Senzo(a,h)anthracene Sibenzo(a,h)anthracene	n.a n.a. n.a.	na na na na	na na na	na na na	8.78E-08		
industrial worker  Semi-Velatile Compounds  Senzo(a)anthracene Senzo(a)pyrrane Senzo(b)fluoranthene Dibenz(a,h)anthracene Dibenz(a,h)anthracene Dibenz(a,h)anthracene Dibenz(a,h)anthracene	na na na 6.36E-08	na na na na 1.59E-05	na na na na	na na na na	8.78E-08		
industrial worker  Semi-Volatile Compounds  Benzo(a)anthracene  Benzo(a)pyrene  Benzo(b)fluoranthene	na na na 6.36E-08	na na na na 1.59E-05	na na na na	na na na na	8.78E-08		

Non-Carcinogenic Risk Based on Maximum Desected Concentr Centrel Tendency Exposure

Construction Worker							
	Oral latake (mg/kg/day)	Nou-Carcinogeaic Risk Hazard Quotient	Inhaintion Intake (mg/kg/day)	Non-Carcinogenic Risk Hazard Quotlent	Dermai latake (mg/kg/day)	Non-Carcinogenic Risk Hazard Quotient	Total Non-Carcinogenic Risk
Semi-Volutile Compounds							
Benzo(a)anthracene	2	11	tu	2	2	24	
Benzo(a)pyrene	2	2	2	2	겉	g	
Benzo(b)fluoranthene	2	2	2	2	2	80	
Dibenz(a,h)anthracene	4	72	g	70	TUT.	78	
Dibenzofuran	5.49E-08	1.37E-05	eu.	2	8.77E-08	3.13E-05	4.50E-05
Indexo(1,2,3-cd)pyrene	Ħ	<b>4</b> 0	2	<b>4</b> 0	Z	2	
Meats							
Lead	ga	Ta	Į.	결	2	92	
Total		1.37E-05				3.13E-05	4.50E-05
							- College
Industrial Worker							
Semi-Volatile Compounds							
Benzo(a)anthracene	7	<b>5</b> 11	2	2	2	D.	
Benzo(a)pyrene	2	2	2	2	20	EU	
Benzo(b)fluoranthene	2	22	2	3	2	24	
Dibenz(a,h)anthracene	Ħ	2	<b>5</b>	2	2	2	
Dibenzofuran	3.86E-08	9.65E-06	20	2	5.32E-08	1.90E-05	2.86E-05
Indeno(1,2,3-cd)pyrene	<b>9</b> 0	te e	2	7.11	22	200	
Menuls							
[cad	2	<b>a</b>	2	2	8	đ	-
Total		9.65E-06				1.90E-05	2.86E-05

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Table 9 Carcinogenic Risk
Maximum Detected Concentration in Subsurface Soil (Excavation No. 2)
Reasonable Maximum Exposure

···	Oral Intake	Carcinogenic Risk	Inhalation Intake	Carcinogenic Risk	Dermal Intake	Carcinogenic Risk	Total Carcinogen
	(mg/kg/day)	Oral	(mg/kg/day)	Inhalation	(mg/kg/day)	Dermal	Risk
Semi-Volatile Compounds							
Benzo(a)anthracene	7.96E-08	5.81E-08	DA.	<u>na</u>	na .	na	5,81E-08
Benzo(a)pyrene	7.96E-08	5.81E-07	1.142-09	3.53E-09	na	na	5.84E-07
Benzo(b)fluoranthene	9.22E-08	6.73E-08	TAR.	na	DA	na	6.73E-08
Dibenz(a,h)anthracene	1.76E-08	1.28E-07	na	na .	T.A.	na	1.28E-07
Dibenzofuran	n <b>a</b>	na	na	na	na na	na	na
Indeno(1,2,3-cd)pyrene	6.29E-08	4.59E-08	na na	na	na	na	4.59E-08
						na	
Metals							
Lead	na	na	na	na			
Total		8.80E-07		3.53E-09			8.84E-07
Industrial Worker					, <u>, , , , , , , , , , , , , , , , , , </u>	· · · · · · · · · · · · · · · · · · ·	
Semi-Volatile Compounds							
Benzo(a)anthracene	3.33E-07	2.43E-07	ne	na	na.	na	2.43E-07
Benzo(a)pyrene	3.33E-07	2.43E-06	4.56E-08	1.41E-07	na	na	2.57E-06
Benzo(b)fluoranthene	3.85E-07	2.81E-07	na	na	na	na	2.81E-07
Dibenzo(a,h)anthracene	7.35E-08	5.37E-07	na	na	n <b>a</b>	na.	5.37E-07
Dibenzofuran	na na	na	na	na	n.a.	na.	na
indeno(1,2,3-cd)pyrene	2.63E-07	1.92E-07	na	na	na	na	1.92E-07
A ALL D. C. DARLIN					<del></del>	tse.	
Metals						•	
Lead	na	na	na	na			
Lead	1344						

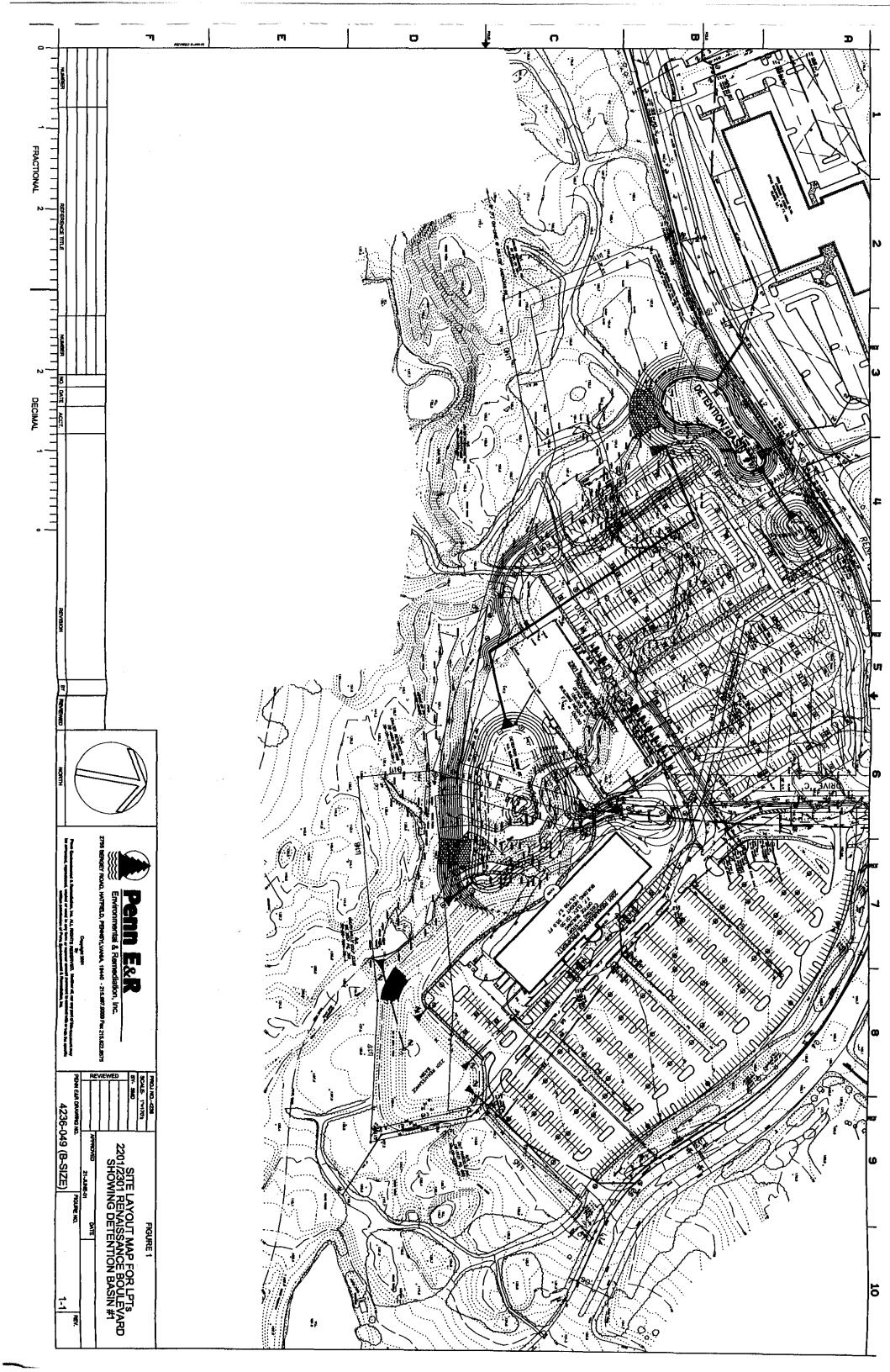
Table 10 Carcinogenic Risk

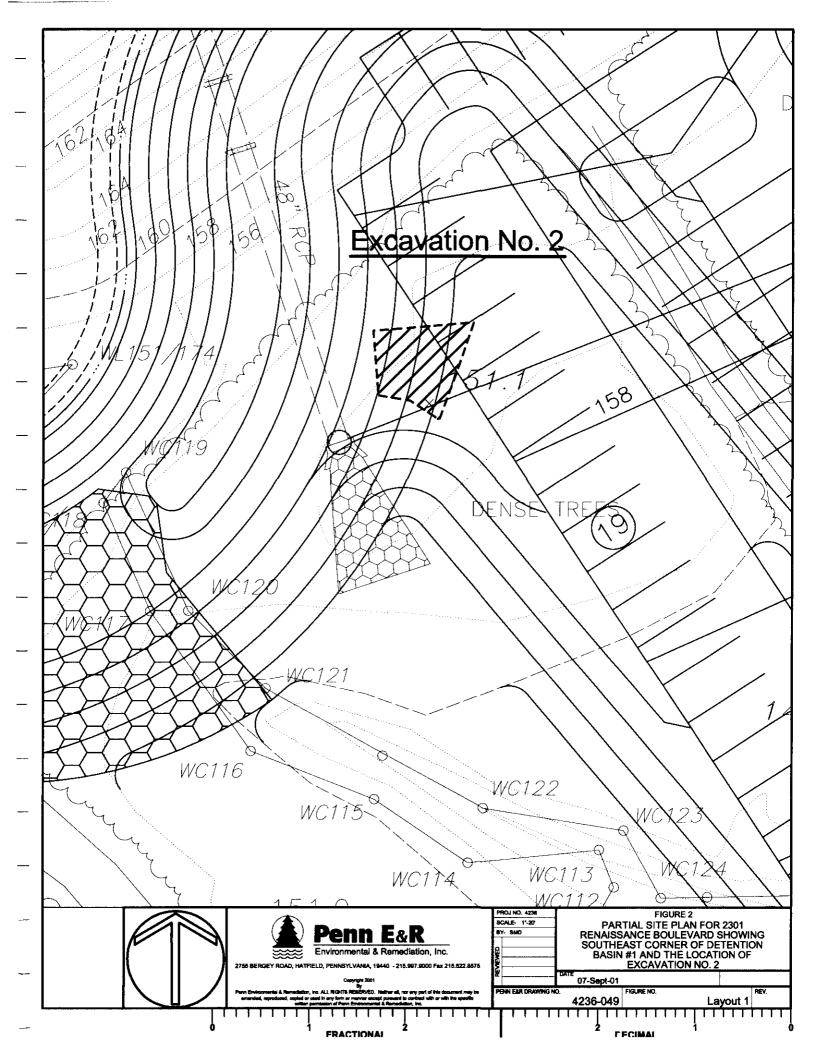
Maximum Detected Concentration in Subsurface Soil (Excavation No. 2)

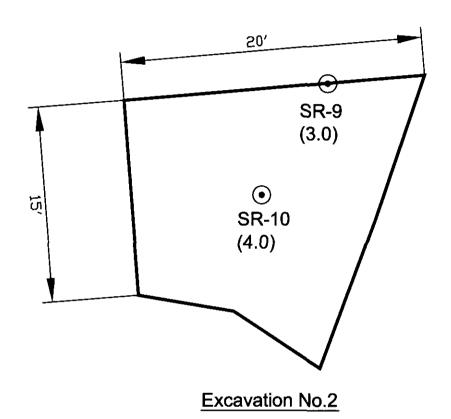
Central Tendency Exposure

Cons	truction	Worker

	Oral Intake	Carcinogenic Risk	Inhalation Intake	Carcinogenic Risk	Dermal Intake	Carcinogenic Risk	Total Carcinogeni
<del></del>	(mg/kg/day)	Oral	(mg/kg/day)	Inhalation	(mg/kg/day)	Dermal	Risk
Semi-Volatile Compounds							
Benzo(a)anthracene	1.13E-08	8.28E-09	na	na	na	na	8.28E-09
Вспzо(а)рутепе	1.31E-08	9.55E-08	3.41E-10	1.06E-09	na	na.	9.66E-08
Benzo(b)fluoranthene	1.74E-08	1.27E-08	na	na.	na	Då	1.27E-08
Dibenzo(a,h)anthracene	2.96E-09	2.16E-08	na	na	na	na	2.16E-08
Dibenzofuran	na	na	na	na	na	na	na
indeno(1,2,3-cd)pyrene	1.05E-08	7.64E-09	na	na	na	na na	7.64E-09
						na	
Metais							
Lead	na	na	na	па			
Total		1.46E-07		1.06E-09			1.47E-07
						<del></del>	
Industrial Worker							
Industrial Worker Semi-Volatile Compounds							
industrial Worker  Semi-Volatile Compounds Benzo(a)anthracene	5.58E-08	4.07E-08	na	na	na	na	4.07E-08
industrial Worker  Semi-Volatile Compounds Benzo(a)anthracene Benzo(a)pyrene	6.44E-08	4.70E-07	na 3.48E-09	na 2.54E-08	na na	na na	4.95E-07
industrial Worker  Semi-Volatile Compounds  Benzo(a)anthracene  Benzo(a)pyrene  Benzo(b)fluoranthene	6.44E-08 8.58E-08	4.70E-07 6.26E-08					4.95E-07 6.26E-08
Industrial Worker  Semi-Volatile Compounds  Benzo(a)anthracene  Benzo(a)pyrene  Benzo(b)fluoranthene  Dibenzo(a,h)anthracene	6,44E-08 8.58E-08 1.46E-08	4.70E-07 6.26E-08 1.06E-07	3.48E-09 na na	2.54E-08 na na	na na na	na na na	4.95E-07
Industrial Worker  Semi-Volatile Compounds  Benzo(a)anthracene  Benzo(a)pyrene  Benzo(b)fluoranthene  Dibenzo(a, h)anthracene	6,44E-08 8.58E-08 1.46E-08	4.70E-07 6.26E-08 1.06E-07 na	3.48E-09 na na na	2.54E-08 na na na	na na na na	na na na na	4.95E-07 6.26E-08 1.06E-07 na
Semi-Volatile Compounds Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzofuna	6,44E-08 8.58E-08 1.46E-08	4.70E-07 6.26E-08 1.06E-07	3.48E-09 na na	2.54E-08 na na	na na na	na na na na	4.95E-07 6.26E-08 1.06E-07
Semi-Volatile Compounds Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Dibenzofuran Indeno(1,2,3-cd)pyrene	6,44E-08 8.58E-08 1.46E-08	4.70E-07 6.26E-08 1.06E-07 na	3.48E-09 na na na	2.54E-08 na na na	na na na na	na na na na	4.95E-07 6.26E-08 1.06E-07 na
Semi-Volatile Compounds Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Dibenzofuran Indeno(1,2,3-cd)pyrene Metals	6.44E-08 8.58E-08 1.46E-08 ma 5.15E-08	4.70E-07 6.26E-08 1.06E-07 na 3.76E-08	3.48E-09 na na na na	2.54E-08 na na na na	na na na na	na na na na	4.95E-07 6.26E-08 1.06E-07 na
Semi-Volatile Compounds Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzofuna	6,44E-08 8.58E-08 1.46E-08	4.70E-07 6.26E-08 1.06E-07 na	3.48E-09 na na na	2.54E-08 na na na	na na na na	na na na na	4.95E-07 6.26E-08 1.06E-07 na

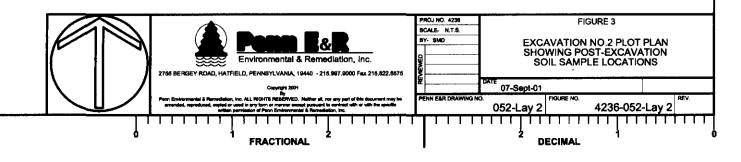






### **LEGEND**

Soil Sample Location Showing SR-10 Sample Collection Depth In Feet (4.0)



#### APPENDIX A

SOIL DISPOSAL MANIFESTS FOR EXCAVATION NOs. 2 AND 3

R3 TECHNOLOGIES
7 STEEL ROAD EAST
MORRISVILLE, PA 19067-0847

Ticket 12679 Date 18/7/01 Time 19/10:25 AM

MA 25 ALL BUT ANT

PER: PENN E& R

Job: ACT0103010PH

Hauler: HERMANS TRUCKING

Truck: H 33

Gross: 81420 Tare: 29500

Net: 51920 Lbs. 25.96 Tons

Product: Petroleum Hydrocarbon

Lic: 06041

Manifest No.: 53977



R<sub>3</sub> Technologies, Inc. • 7 Steel Road East • P.O. Box 847 • Morrisville, PA 19067-0847 • Phone: (215) 428-1700

## NON-HAZARDOUS WASTE MANIFEST

1.	EPA LD. No., Generator of Waste:	LIEERTY PROP	ERTY TRUST	
ř.,	Company Name: (Print or Type) _			
		2301 RENNAISAI	NCE BLVD. UPPER N	ERION PA
	Pick-up Address: (No.)	(Street)	(City)	(Sinte)
	Telephone Number:	F	ax Number:	
	010-122-	4114 This manifest represents a non-haz	610-644-4	129 DA DE Progulations
	Waste Stream Identification:	rins maintest representation-had	andous wasic as per EFA and	FA D.E.F. leguladons.
٠	Tons:	Cubic Yards:	Other: (Specify)	<b>建造</b>
<i>:</i> .	PET	ROLEUM CONTAMINATEI		
	Waste Type:		1,	
•	Special Handling Instructions, if an	NONE		· ·
	PROFILE/ WASTE STREAM	a LD. NUMBER: (2015)	ACT0103010PH	
. 📜				real figures (figures en all en algebra
CO	is is to certify that the above named rendition for transportation according to the tify that the foregoing is true and cortify that the above named in the cortific that the corti	o applicable state and federal law.	escribed, puckaged, marked, an The wastes were consigned to	d labeled, and are in proper the transporter named. T
		The second s	A 1 1	
Da	ite: 5/6/01	Signature:	(Name and Title)	UP
•			**	
			,	
2.	Hanler of Waste (must be filled in b	y hauler) EPA L.D. No.:	(if applicable)	
٠	COMPANY NAME:	No		rucking
			71/5-11	- 16d
	ADDRESS:		JU I WARANT	en 119
	Pick-up Date: 8-7-01	Truck No.: <u>33</u>	Vehicle Lic. No.: 2	4A139 PNJ
ř	The above described waste was picl under penalty of perjury that the for			l was accepted. I certify
		(Signature of authorized agent	<u>}.</u>	
-		(Signature of authorized plent)		
3.	Processing Facility: R3 Techno 7 Steel Ros Morrisville			
	Permit #30			
	Waste subject to this manifest was d hauler to this disposal facility and a		, , , , , , , , , , , , , , , , , , ,	
		· · · · · · · · · · · · · · · · · · ·	/	6/8701
		, (Signature of authorized agent	and title)	
-	· · · · · · · · · · · · · · · · · · ·	······································		

## R3 TECHNOLOGIES 7 STEEL ROAD EAST MORRISVILLE, PA 19067-0847 215,428,1700

Date:8/7/01

Time In: 10:00 AM

Time Outild:00 AM

PERI PENN E& R

Job: ACT0103010PH

Hauler: HERMANS TRUCKING

Trucks H 34

Gross: 84660 Tare: 31150

Net: 53510 Lbs. 26.755 Tons

Product: Petroleum Hydrogarbon

Lic: 06041

Manifest No.: 53975



R. Technologies, Inc. • 7 Steel Road East • P.O. Box 847 • Morrisville, PA 19067-0847 • Phone: (215) 428-1700

## NON-HAZARDOUS WASTE MANIFEST

1. EPALD: No., Generator of Waste:				
	TIREKIAI	PROPERTY TRUST		
Company Name: (Print or Type)	2301 RENN/	AISANCE BLVD.	UPPER MERIO	NPA.
Pick-up Address:	(Street)	(City)		(State)
C10_722_411	• •	•	<del>-644-4129</del>	(Suite)
Telephone Number:		- Tux (valuoci		•
Waste Stream Identification This n		on-hazardous waste as p	er EPA and PA D.E.	P. regulations.
Colo	: Yards:	<del></del> -	(Sacrific)	A Printer
3. 3. 4	TIM CONTAMIN		(Specify) some coal tar	<del></del>
Waste Type:				
	NONE			
Special Handling Instructions, if any:			•	
	* * *			
PROPILE / WASTE STREAM LD	NUMBER	ACT010301	CPH	
The second secon				e, e in la estada
his is to certify that the above named materia	als are properly classif	fied, described, packaged	l, marked, and labele	d, and are in proper
ondition for transportation according to applied on the correct to the foregoing is true and correct to	icable state and federa	I law. The wastes were o	consigned to the trans	sporter named.
The state of the s	the best of my known	1		1 1
Date: 8/6/61	Signature:	hola	- FU 7	27
		/ (Name	and Title) &	100
	•			
. Hauler of Waste (must be filled in by haul	ler) EPA I.D. No.:			
		ermons	(if applicable)	
COMPANY NAME:		ermona	<u> </u>	110
ADDRESS:	Same of the same	<b>シ</b> ス	mighistre	www.
5/7/h1	Truck No.:	3 - Vehicle	Lic. No.: AA	2550)
The above described waste was picked up			* * 1	cented I certify
under penalty of perjury that the foregoing		المار المرابع المحاولة المحاول		cepted. I certify
	(Signature of authorize	ed agent and title)		
Daniel Failing D2 Tasks last	- The	· · · · · · · · · · · · · · · · · · ·		
Processing Facility: R3 Technologie 7 Steel Road Ea	ə, mc. Ast		· ·	
	19067-0847		, v	
		· ·	••	
Permit #301254	•			
Permit #301254 Waste subject to this manifest was deliver	red by the above		•	
Permit #301254	red by the above			4
Permit #301254 Waste subject to this manifest was deliver	red by the above		//	h 18-7-
Permit #301254 Waste subject to this manifest was deliver	red by the above	ned agent and title)		18-7-1

GENERATOR!

## R3 TECHNOLOGIES 7 STEEL ROAD EAST MORRISVILLE, PA 19057-0847

PER: PENN E& R

Jobs ACT0103010PH

Hauler: HERMANS TRUCKING

Truck: H 36

Gross: 73500 Tare: 24500

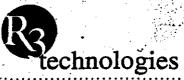
Net: 49000 Lbs. 24.5 Tons

Product: Petroleum Hydrocarbon

Lic1 06041

In109:57 AM

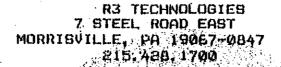
ME Out 109,57 AM



R<sub>3</sub> Technologies, Inc. • 7 Steel Road East • P.O. Box 847 • Morrisville, PA 19067-0847 • Phone: (215) 428-1700

## NON-HAZARDOUS WASTE MANIFEST

1. EPA LD. No., Generator of Waste:	LIBERTY P	ROPERTY TRUST		
Company Name: (Print or Type)				
	2301 RENNA	BANCE BLVD.	JPPER MERION P	A.
Pick-up Address:(No.)	(Street)	(City)		(State)
Telephone Number:610-722-	4114	Fax Number:	10-644-4129	
Waste Stream Identification:	This manifest represents a no	n-hazardous waste as per	EPA and PA D.E.P. re	gulations.
	2	-		
	Cubic Yards: OFFUM CONTAMINA		pecify)some coal tar	
Waste Type:	CHANNEL PICKS INCOME	TRIFFACILITY WELL	Some Coar tar	· ·
Special Handling Instructions, if any	NONE			
Special Handling historicis, it may				
		ACT0103010	<u> </u>	
PROFILE/ WASTE STREAM	H.D. NUMBER:	. 71010103010		· · · · · · · · · · · · · · · · · · ·
ns is to certify that the above named mandition for transportation according to	naterials are properly classific	ed, described, packaged,	marked, and labeled, a	nd are in proper
nuiton for gailsportation according to rufy that the foregoing is true and corr	ect to the best of my knowle	dge. The wastes were co	usigned to the transpor	ter numeu. F
	;			<i>₹</i> %
*/10/-	Signature:	h -11-	/ 17	*1 *
Ate: 6/6/0	Signature:	/ (Name a	nd Title)	· · · · · · · · · · · · · · · · · · ·
		, ,		
		<del></del>		,
Hauler of Waste (must be filled in by		ei e	(applicable)	
	/y	lahan anis"	Tour	
COMPANY NAME:	<del>//</del>	11/1/11/11/A	TIONADA	1
ADDRESS: 18/ Jacobs	Le consider		north to be	alor
ADDRESS: 15 JUCCES	TOWN COOKSTO	W/U	A Comment	~ ///
4/7/	The second secon	*****	. 10	
Pick-up Date: 8/7/11	ITUCK NO.: 3	venicie i	.ic. No.: <del>/ D G \                                 </del>	
The above described waste was pick	ed up and hauled by me to th			ed. I certify
under penalty of perjury that the fore	going is true and correct.		•	
The state of the state of	al a	المنطق المراجع المناطقة		
				·
	(Signature of authorized	agent and title)		<u> </u>
	- \ - !			
Processing Facility: R3 Technol		•		
7 Steel Roa				
	, PA 19067-0847			
Permit #30	1254			· · · · · · · · · · · · · · · · · · ·
Waste subject to this manifest was de	elivered by the above			
hauler to this disposal facility and ac		<u> </u>		
	•			
Control of the contro		N. Carlotte	1	0
<u> </u>		<u> </u>	-//	<del>X. /=</del> C
₹ <sup>7</sup> 2 <del>11</del>	, (Signature of authorized	agent and title)		υ, ,
	· · · · · · · · · · · · · · · · · · ·		M	



PER: PENN E& R

Job: ACT0103010PH

Hauler: HERMANS TRUCKING

Truck: MERT

Gross: 83400 Tare: 24500

Net: 58900 Lbs. 29.45 Tons

Product: Petroleum Hydrocarbon

Time Dut/09/23 AM Manifest# 03077

Ticket:2668 Date:8/7/01 Time:In:109:23 AM

Lic: 06041



R<sub>3</sub> Technologies, Inc. • 7 Steel Road East • P.O. Box 847 • Morrisville, PA 19067-0847 • Phone: (215) 428-1700

NON-HAZARDOUS WASTE MANIFEST

1. EP/	A I.D. No., Generator of Waste:
•	Libert Para Tank
	of un Address: 2301 Renaiser Blot. Vose Merin Pa
	(No.) (Street) (City) (State)
Tele	Pick-up Address: 330   Parasaua Blof. Uses Mining Fa  (No.) (Super) (Cay)   Parasaua Blof. Uses Mining Fa  (No.) (Super) (Cay)   Parasaua Fa  (No.) (Cay)   Parasaua Fa  (No.) (Super) (Cay) (Cay)   Parasaua Fa  (No.) (Cay) (Cay) (Super) (Super) (Cay) (Super)
- Was	Sie Sileam identification.
Ton	Diet. (openy)
•	
Spe	ecial Handling Instructions, if any:
PR	ROFILE/WASTESTREAMED NUMBER: 40T 1103010PH
condition	on for transportation according to applicable state and federal law. The wastes were consigned to the transporter named, I
Date: _	Signature:
	(reame and titige
2. Han	uler of Waste (must be filled in by hauler) EPA I.D. No.:
<b>70</b>	(if applicable)
AD	DRESS: Mathemania
Picl	k-up Date: 8.7.01 Truck No.: 93 Vehicle Lic. No.: AD5 867
The	e above described waste was picked up and hauled by me to the disposal facility named below and was accepted. I certify
<u>-</u>	(Signature of authorized agent and title)
3. Pro	cessing Facility: R3 Technologies, Inc. 7 Steel Road East
Was	ste subject to this manifest was delivered by the above aler to this disposal facility and accepted on this date:
hau	
hau	1,27.
hau	(Signature of authorized agent and title)



PER: PENN E& R

Jobi ACT0103010PH

Hauleri HERMANS TRUCKING

Truck: KISMET

Gross: 80420 Tare: 25500

Net: 54920 Lbs. 27.46 Tons

Product: Petroleum Hydrocarbon

TLANGUE DO 121 AM

Lic: 06041

Manifest No.: 53974

## technologies

R<sub>3</sub> Technologies, Inc. • 7 Steel Road East • P.O. Box 847 • Morrisville, PA 19067-0847 • Phone: (215) 428-1700

## NON-HAZARDOUS WASTE MANIFEST

- Jr	1. EPA LD. No., Generator of Waste:
Name (ATTEN	Company Name: (Print or Type) LIBERTY PROPERTY TRUST
4.7	Company France. (Time of Type)
	Pick-up Address: 2301 RENNAISANCE RI VI TIPPER MENTON PA (No.) (Surer) (City) (State)
•	Telephone Number: 610-722-4114 Fax Number: 610-644-4129
	Waste Stream Identification: This manifest represents a non-hazardous waste as per EPA and PA D.E.P. regulations.
	Tons: Cubic Yards: 20 Other: (Specify)
	Waste Type: 2 PRINCIPINI CONTANINATION SOIL with Some coal tar
, ř	Special Handling Instructions: if any:
<del>-</del>	NONE
— <sup>)</sup>	PROFILE WASTE STREAM LD. NUMBER:
	This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled, and are in proper
AMARIA.	condition for transportation according to applicable state and federal law. The wastes were consigned to the transporter named. I certify that the foregoing is true and correct to the best of my knowledge.
	2/1/2
	Date: Signature: (Name and Title)
ţ- -	
	2. Hauler of Waste (must be filled in by hauler) EPA I.D. No.: (ff applicable)
- -: *	COMPANY NAME: // LITTLE (II applicable)
- 3	41-14-
	ADDRESS A TOLOUT
÷:	Pick-up Date Vehicle Lic. No.: Vehicle Lic. No.:
	The above described waste was picked up and hauled by me to the disposal facility named below and was accepted. I certify under penalty of perjury that the foregoing is true and correct.
ه دودو معمونی	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(Signature of authorized agent and title)
	3. Processing Facility. R3 Technologies, Inc.
	7 Steel Road East
ا المهور	Morrisville, PA 19067-0847 Permit #301254
7	Waste subject to this manifest was delivered by the above
بيرس مشعور الأمان	hauler to this disposal facility and accepted on this date:
<b></b>	1-19-7
Market Street	(Signature of authorized agent and title)
منبه	



PER: PENN E& R

Jobs ACT0103010PH

Hauler: HERMANS TRUCKING

Truck: RKO

Gross: 77380 Tare: 24300

Net: 53080 Lbs. 26.54 Tons

Product: Petroleum Hydrocarbon

Lic: 06041

LINE THIOS: 00 AM

MA DOLEDITUDE



R<sub>3</sub> Technologies, Inc. • 7 Steel Road East • P.O. Box 847 • Morrisville, PA 19067-0847 • Phone: (215) 428-1700

## NON-HAZARDOUS WASTE MANIFEST

٠,	
1.	EPA I.D. No., Generator of Waste:
	Company Name: (Print or Type)
	Pick-up Address: 230/ Revaissone Blad Upper Derin
	(No.) (Sinse) (City) (1// (Sinte)
	Telephone Number: 610-723-4114 Fax Number: 610-644-4139
	Waste Stream Identification: This manifest represents a non-hazardous waste as per EPA and PA D.E.P. regulations.
	Tons: Cubic Yards: Other: (Specify)
	Weste Type: Petrolium Cont Soul with some contra
	Waste Type: Coal to
	Special Handling Instructions, if any: None
	: 00-616-361664
	PROFILE WASHESTREAMED NUMBER: ROTO103010PH
Th	is is to certify that the above named materials are properly classified, described, packaged, marked, and labeled, and are in proper
	ndition for transportation according to applicable state and federal law. The wastes were consigned to the transporter named. I tify that the foregoing is true and correct to the best of my knowledge.
Da	te: Signature: (Name apil Title)
2	Hauler of Waste (must be filled in by hauler) EPA I.D. No.:
<b></b> ∙	CONTRANTY NAME: (if applicable)
	COMPANI NAME:
	ADDRESS: Wrightstown
	Pick-up Date: 8-7-01 Truck No.: 2KO-15 Vehicle Lic. No.: AE616T
	The above described waste was picked up and hauled by me to the disposal facility named below and was accepted. I certify
	under penalty of perjury that the foregoing is true and correct.
	- Alexander - Alex
_	(Signature of authorized agent and title)
3.	Processing Facility: R3 Technologies, Inc.
	7 Steel Road East Morrisville, PA 19067-0847
	Permit #301254
	Waste subject to this manifest was delivered by the above hauler to this disposal facility and accepted on this date:
	mander to this disposal factority and accepted on this time.
	11/870/
	(Signature of authorized agent and title)

R3 TECHNOLOGIES
7 STEEL ROAD EAST
MORRISVILLE, PA 19067-0847
215.428.1700

Time In 08:58 AM

Time Dution:58 AM

PERI PENN E& R

Job: ACT0103010PH

Haulers HERMANS TRUCKING

Truck: YKO 94

Gross: 81180 Tare: 25020

Net: 56160 Lbs. 28.08 Tons

Product: Petroleum, Hydrocarbon

Lic: 06041

Manifest No.: <u>53075</u>



R<sub>3</sub> Technologies, Inc. • 7 Steel Road East • P.O. Box 847 • Morrisville, PA 19067-0847 • Phone: (215) 428-1700

## NON-HAZARDOUS WASTE MANIFEST

Pick-up Da The above under pena  3. Processing Waste subje	described waste was pickly of perjury that the for facility: R3 Techno 7 Steel Ros	Signature of authorized plogies, Inc. ad East e, PA 19067-0847 01254 delivered by the above	agent and (title)	1 2 7.01
Pick-up Da The above under pena  3. Processing Waste subje	Facility: R3 Techno 7 Steel Ros Morrisville Permit #30 ect to this manifest was d	Signature of authorized plogies, Inc. ad East e, PA 19067-0847 01254 delivered by the above	agent and title)	and was accepted. I certify
Pick-up Da The above under pena	described waste was pickly of perjury that the for Facility: R3 Techno 7 Steel Ros Morrisville	Signature of authorized plogies, Inc. ad East e, PA 19067-0847	agent and (title)	and was accepted. I certify
Pick-up Da The above	described waste was picl	years	agent and title)	and was accepted. I certify
Pick-up Da The above	described waste was picl	years	Kehrel	and was accepted. I certify
Pick-up Da The above	described waste was picl	regoing is true and correct.		and was accepted. I certify
Pick-up Da		ked up and hauled by me to the	e disposal facility named below	and were accounted. I contifu
		•	Vehicle Lic. No.:	<del>-</del>
	· ·	4 //	PARTER TO LEGISTATION OF C	
COMPANY	Y NAME:	Hemons		
2. Hauler of V	Vaste (must be filled in b	by hauler) EPA I.D. No.:	(if applicable	1
•		Signature:	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	VP.
condition for tr	ransportation according to		ed, described, packaged, marked, law . The wastes were consigned dge.	
PROFILI	/WASTESTREAM	M LD. NUMBER:	40.7010	301 OPA
<del> </del>		3		<u> </u>
Special Har	ndling Instructions, if an	у: <del></del>	non	
Waste Type	<b>5</b> *	Petrol	Cout Sail	with sue coal ?
Tons:		Cubic Yards:	Other: (Specify)	
Waste Strea	•		n-hazardous waste as per EPA ar	
•	Mullioci. — T	732-4114	Fax Number: Le 16 - 64	14-4129 (State)
Telephone	Number: $\frac{(No.)}{(10-)}$		nu Blid	"Cepumerent
Pick-up Ad	(No.)	Revaiss		
Pick-up Ad	(No.)	Renain	The top it	uty Mosp. Mus

R3 TECHNOLOGIES
7 STEEL ROAD EAST
MORRISVILLE, PA 19067-0847

Fire In 108:56 AM

Time Out 108:56 AM

PER: PENN E& R

Jöb: ACT@103010PH

Hauler: HERMANS TRUCKING

Truck: HKO

Gross: 77160 Tare: 25640

Net: 51520 Lbs. 25.76 Tons

Product: Petroleum Hydrocarbon

Lic: 06041

Manifest No.: 53073



R<sub>3</sub> Technologies, Inc. • 7 Steel Road East • P.O. Box 847 • Morrisville, PA 19067-0847 • Phone: (215) 428-1700

### **NON-HAZARDOUS WASTE MANIFEST**

1. EPA I.D. No., Generator of Waste				
,		4 00		/
Company Name: (Print or Type)	Lebert		<del> </del>	2013
Pick-up Address: 230		certains les	permerco	n/a
Telephone Number: (No.)	- 722 - 4114	Fax Number: (City)	1044-4129	e)
Waste Stream Identification:	This manifest represents a non-l	azardous waste as per EPA ar	nd PA D.E.P. regulat	ions.
Tons:	Cubic Yards: 20	Other: (Specify)		
			ail with:	Some coult
Waste Type:			00,,,,	
Special Handling Instructions, if a	my: None			· · · · · · · · · · · · · · · · · · ·
PROFILE / WASTE STREA	AM LD. NUMBER:	ACT DIO30	1004	
his is to certify that the above named	i materials are properly classified.	described, packaged, marked,	and labeled, and are	e in proper
ondition for transportation according ertify that the foregoing is true and co	to applicable state and federal lav	<ol> <li>The wastes were consigned</li> </ol>	to the transporter na	nmed. I
			<i>2</i>	
Pate: 8/6/8/	Signature:	(Name and Fife)	<u>Ur</u>	
	<u> </u>	<u> </u>		
Hauler of Waste (must be filled in	by hauler) EPA I.D. No.:			
•	by hauler) EPA I.D. No.:	(if applicable	)	
COMPANY NAME:	Heimons	(if applicable		
COMPANY NAME:	Heimons Wrightstown	(if applicable		
COMPANY NAME:	Heimons	(if applicable		2.NS
COMPANY NAME:  ADDRESS:  Pick-up Date:	Mirrors  Wrightstown  Truck No.:   MKO  icked up and hauled by me to the o	Vehicle Lic. No.:	AD 73 12	
ADDRESS:  Pick-up Date:   One of the content of the	Mirrors  Wrightstown  Truck No.:   MKO  icked up and hauled by me to the o	Vehicle Lic. No.:	AD 73 12	
COMPANY NAME:  ADDRESS:  Pick-up Date:  The above described waste was pi	Mirrors  Wrightstown  Truck No.:   MKO  icked up and hauled by me to the o	Vehicle Lic. No.:	AD 73 12	
COMPANY NAME:  ADDRESS:  Pick-up Date:  Pick-up Date:  One of the above described waste was piunder penalty of perjury that the form of the processing Facility:  R3 Techn	Truck No.: HKO icked up and hauled by me to the coregoing is true and correct.  (Signature of authorized age	Vehicle Lic. No.:	AD 73 12	
COMPANY NAME:  ADDRESS:  Pick-up Date: 2.7.01  The above described waste was pi under penalty of perjury that the fellows are penalty of penalty o	Truck No.:   Truck No.:   Coregoing is true and correct.  (Signature of authorized age and East	Vehicle Lic. No.:	AD 73 12	
COMPANY NAME:  ADDRESS:  Pick-up Date:  Pick-up Date:  One of the processing Facility:  Processing Facility:  R3 Technology  7 Steel R6	Truck No.: HKO icked up and hauled by me to the coregoing is true and correct.  (Signature of authorized age alologies, Inc. oad East lle, PA 19067-0847	Vehicle Lic. No.:	AD 73 12	
ADDRESS:  Pick-up Date:  Pick-up Date:  The above described waste was pi under penalty of perjury that the formula for the following states and the following states are also as a second state of the following s	Truck No.: HKO icked up and hauled by me to the coregoing is true and correct.  (Signature of authorized age alologies, Inc. oad East lle, PA 19067-0847 301254 is delivered by the above	Vehicle Lic. No.:	AD 73 12	
COMPANY NAME:  ADDRESS:  Pick-up Date:  The above described waste was pi under penalty of perjury that the form of the penalty	Truck No.: HKO icked up and hauled by me to the coregoing is true and correct.  (Signature of authorized age alologies, Inc. oad East lle, PA 19067-0847 301254 is delivered by the above	Vehicle Lic. No.:	AD 73 12	
Pick-up Date:  Pick-up Date:  Pick-up Date:  Processing Facility:  R3 Techn 7 Steel Ro Morrisvil Permit #3  Waste subject to this manifest was	Truck No.: HKO icked up and hauled by me to the coregoing is true and correct.  (Signature of authorized age alologies, Inc. oad East lle, PA 19067-0847 301254 is delivered by the above	Vehicle Lic. No.: lisposal facility named below  and little)	AD 73 12	

R3 TECHNOLOGIES
7 STEEL ROAD EAST
MORRISVILLE, PA 19067-0847
215.428.1700

Ticket:2662 Date:8/7/01

Time In:00:54 AM

Time Out:08:54 AM Manifest#:53074

PER: PENN E& R

Job: ACT0103010PH

Hauler: HERMANS TRUCKING

Truck: YKO 95

Gross: 73780 Tare: 24600

Net: 49180 Lbs. 24.59 Tons

Product: Petroleum Hydrocarbon

Lic: 06041

Manifest No.: 53074

# Rechnologies

R<sub>3</sub> Technologies, Inc. • 7 Steel Road East • P.O. Box 847 • Morrisville, PA 19067-0847 • Phone: (215) 428-1700

## NON-HAZARDOUS WASTE MANIFEST

EPA I.D. No., Generator of Waste:	01.1.0
Company Name: (Print or Type)	iberty Prop Trust
Pick-up Address: 2301 Postacisto	ne Blod apper Merrenta
Telephone Number: (10-77) -4/14	(City) (State)  Fax Number: 10/0 - 1044 - 4/29
	non-hazardous waste as per EPA and PA D.E.P. regulations.
waste Stream recition.	74
Tons: Cubic Yards:	Other: (Specify) Sail With Same Co
Waste Type: ————————————————————————————————————	at coul Soil hith Same Co
Special Handling Instructions, if any:	
	-
PROFILE / WASTE STREAM LD, NUMBER:	40 TO 10 3010 PH
<u> </u>	
is is to certify that the above named materials are properly class addition for transportation according to applicable state and fede	sified, described, packaged, marked, and labeled, and are in proper ral law. The wastes were consigned to the transporter named. I
rtify that the foregoing is true and correct to the best of my know	wledge.
	A A A
va 8/6/01 Signatura:	hand UP
ate: - 8/6/0; Signature:	(Name and Title) UP
	, traine and time,
	/ Islance and time?
Hauler of Waste (must be filled in by hauler) EPA I.D. No.:	(if applicable)
Hauler of Waste (must be filled in by hauler) EPA I.D. No.:  COMPANY NAME:	(if applicable)
Hauler of Waste (must be filled in by hauler) EPA I.D. No.:  COMPANY NAME:	(if applicable)
Hauler of Waste (must be filled in by hauler) EPA I.D. No.:  COMPANY NAME:	(if applicable)
Hauler of Waste (must be filled in by hauler) EPA I.D. No.:	tif applicable)  2315. 42.0-95 Vehicle Lie. No.: DEU05 2NS  o the disposal facility named below and was accepted. I certify
Hauler of Waste (must be filled in by hauler) EPA I.D. No.:  COMPANY NAME:	tif applicable)  2315. 42.0-95 Vehicle Lie. No.: DE 405 2NS  o the disposal facility named below and was accepted. I certify
Hauler of Waste (must be filled in by hauler) EPA I.D. No.:	tif applicable)  2315. 42.0-95 Vehicle Lie. No.: DE 405 2NS  o the disposal facility named below and was accepted. I certify
Hauler of Waste (must be filled in by hauler) EPA I.D. No.:	tif applicable)  235.42.0-95 Vehicle Lic. No.: DEUDS 2NS  o the disposal facility named below and was accepted. I certify
Hauler of Waste (must be filled in by hauler) EPA I.D. No.:	tif applicable)  235.42.0-95 Vehicle Lic. No.: DEUDS 2NS  o the disposal facility named below and was accepted. I certify
Hauler of Waste (must be filled in by hauler) EPA I.D. No.:	tif applicable)  235.42.0-95 Vehicle Lic. No.: DEYOS 2NS  o the disposal facility named below and was accepted. I certify
Hauler of Waste (must be filled in by hauler) EPA I.D. No.:	tif applicable)  235.42.0-95 Vehicle Lic. No.: DEUDS 2NS  o the disposal facility named below and was accepted. I certify
Hauler of Waste (must be filled in by hauler) EPA I.D. No.:	(if applicable)  235.42.0-95 Vehicle Lic. No.: DEUDS ZNS  o the disposal facility named below and was accepted. I certify
Hauler of Waste (must be filled in by hauler) EPA I.D. No.:	(if applicable)  1.245.42.0-95 Vehicle Lic. No.: DEUDS ZNS  o the disposal facility named below and was accepted. I certify

### APPENDIX B

LABORATORY ANALTYICAL DATA SHEETS FOR POST-EXCAVATION SOIL SAMPLES COLLECTED FOR EXCAVATION NO. 2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SR-9

Lab Name: COMPUCHEM

Contract: OLM04-REVS

Lab Code: LIBRTY

Case No.:

LOW

SAS No.:

SDG No.: R2141

Matrix: (soil/water) SOIL

Lab Sample ID: R2141-13

Sample wt/vol:

Lab File ID: R2141-13JA66

Level:

30.0(q/mL) G

Date Received: 07/06/01

(low/med)

Concentrated Extract Volume:

% Moisture: 11

decanted: (Y/N) N

Date Extracted: 07/10/01

Date Analyzed: 07/12/01

Injection Volume:

2.0 (uL)

Dilution Factor: 1.0

GPC Cleanup:

(Y/N)Y

7.0 pH:

500 (uL)

Extraction: (Type) SONC

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/KG

132-64-9	Dibenzofuran	42 J
56-55-3	Benzo(a)anthracene	760
205-99-2	Benzo(b) fluoranthene	1700
50-32-8	Benzo(a)pyrene	1100
193-39-5	Indeno(1,2,3-cd)pyrene	940
53-70-3	Dibenzo(a,h)anthracene	260 J

FORM I SV-1

OLM04.2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SR-10

Lab Name: COMPUCHEM

Contract: OLM04-REVS

Lab Code: LIBRTY

SAS No.:

SDG No.: R2141

Matrix: (soil/water) SOIL

Lab Sample ID: R2141-14

Sample wt/vol:

30.0(g/mL) G

Lab File ID: R2141-14D2A66

Level:

(low/med)

Date Received: 07/06/01

% Moisture: 17

LOW

decanted: (Y/N) N

Date Extracted: 07/10/01

Concentrated Extract Volume:

500 (uL)

Date Analyzed: 07/13/01

Injection Volume:

2.0(uL)

Y

Case No.:

Dilution Factor: 2.0

GPC Cleanup:

(Y/N)

7.4 pH:

Extraction: (Type)

SONC

CAS NO.

COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

132-64-9	Dibenzofuran	130	J
56-55-3	Benzo(a)anthracene	1900	
205-99-2	Benzo(b) fluoranthene	2200	
50-32-8	Benzo(a)pyrene	1900	
193-39-5	Indeno(1,2,3-cd)pyrene	1500	
53-70-3	Dibenzo(a,h)anthracene	420	J

### U.S. EPA-CLP

1

### **INORGANIC ANALYSIS DATA SHEET**

					EPA SAMPLE NO.
ab Name: COMPUCHEM		Cont	ract:		SR-9
	Case No.:		SAS No.:	SDe	G No.: R2141
ab Code: <u>LIBRTY</u> atrix (soil/water):	SOIL		Lab Sample II		
evel (low/med): LO		•	Date Received	<del></del>	<del></del>
Solids: 89.1				<u> </u>	*
3011ds: <u>89.1</u>					•
	Concentratio	n Units (ug/L	or mg/kg dry weig	ht): M	G/KG
	CAS No.	Analyte	Concentration	C Q	м
	7439-92-1	Lead	16.6	<u> </u>	 P
					<del></del>
			<i>y</i>		
Color Before: BROW	N Cla	rity Before:		Texture:	MEDIUM
Color After: YELL	OW Cla	rity After:		Artifacts:	·

### U.S. EPA-CLP

1

### INORGANIC ANALYSIS DATA SHEET

						EPA SAMPLE NO.
do Name:	COMPUCHEM		Cont	ract:		SR-10
ib Code:	LIBRTY	Case No.:		SAS No.:	SDG	No.: R2141
atrix (soi	l/water):	SOIL		Lab Sample I	D: R2141-14	
svel (low/	med): <u>L</u> e	OW		Date Receive	d: <u>07/06/01</u>	
Solids:	82.7					
		Concentration	Units (ug/L	or mg/kg dry weig	nht): MG	
		CAS No.	Analyte	Concentration	C Q M	
		7439-92-1	Lead	40.8	₽	
Color Bef	ore: BRO	WN Clar	ity Before:		Texture:	MEDIUM,
Color Aft	er: YEL	LOW Clar	ity After:		Artifacts:	
Comments:	<del></del>					
~~~~~~						